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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.       | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------------|------------------|
| 10/610,947   | 07/01/2003  | Shunsuke Mizutani    | 17360/80050               | 4104             |
| 513 7590 04/13/2007<br>WENDEROTH, LIND & PONACK, L.L.P.<br>2033 K STREET N. W.<br>SUITE 800<br>WASHINGTON, DC 20006-1021 |             |                      | EXAMINER<br>CHU, HELEN OK |                  |
|  |             |                      | ART UNIT<br>1745          | PAPER NUMBER     |
| SHORTENED STATUTORY PERIOD OF RESPONSE   | MAIL DATE   | DELIVERY MODE        |                           |                  |
| 3 MONTHS   | 04/13/2007  | PAPER                |                           |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

|                              |                        |                     |
|------------------------------|------------------------|---------------------|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |
|                              | 10/610,947             | MIZUTANI ET AL.     |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |
|                              | Helen O. Chu           | 1745                |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 06 March 2007.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 15, 16 and 18-24 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 15, 16, 18-24 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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### **DETAILED ACTION**

1. Applicants' Amendments have been received on September 14, 2006. Claims 15, 16, 19-24 have been amended. Claim 17 has been cancelled.
2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action.

#### ***Continued Examination Under 37 CFR 1.114***

3. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/6/2007 has been entered.

#### ***Claim Rejections - 35 USC § 112***

4. The rejections under 35 U.S.C. 112, first paragraph, on claims 15-24 are withdrawn because Applicants have amended the claims.
5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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6. Claim 15, 16, 18-24 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Specifically, there is no support for the claim recitation discloses a first flow channel and a second flow channel on the same gas flow plate and a switching device switches the first and second flow channel from parallel to series connection and vice versa. Figure 1-15 in the Specification does not show or disclose any type of switching devices on the plate in which causes the first gas flow channel and a second gas flow channel to change the flow direction. Specifically, Figure 1 shows valve devices that would either optimize or minimize the flow at certain external areas but does not give an indication to one of ordinary skill how to manipulate the flow from series to parallel between each flow path within a flow field plate. In addition, Figure 2 and Figure 4 illustrates at least two flow paths but does not indicate how these flow paths switches from series to parallel flow between each other.

Claims depending from claim 15 are rejected under 35 U.S.C. 112, first paragraph, are also rejected for the same.

7. The rejections under 35 U.S.C. 112, second paragraph, on claims 15-24 are withdrawn.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. The rejection under 35 U.S.C 112, second paragraph on claim 1, as being indefinite is withdrawn because the Applicants have cancelled the claim.
10. Claim 15, 16, 18-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The recitation "switching device for switching a connection between said first and second gas flow channels from a parallel connection to a series connection, and from a series connection to a parallel connection" is unclear to the Examiner. This can be interpreted as a switching device on the plate that would manipulate the flow directions between the first flow path and the second flow path. However, one of ordinary skill cannot arrive at the claim recitations by the Specification provided by the Applicants. The recitation "switching a connection" is unclear the Examiner, it appears that the connection of the flow paths on the plate is not switched to parallel and to series but the **gas flow paths** are switched from parallel to series and vice versa.

Claims depending from claim 15 are rejected under 35 U.S.C. 112, second paragraph, are also rejected for the same rejection.

#### ***Claim Rejections - 35 USC § 102***

11. To the extent the claims are understood in view of 35 U.S.C 112 rejections above, note the following prior art rejections.
12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 15, 16, 18-24 are rejected under 35 U.S.C. 102(e) as being anticipated by McElroy (US Patent 6,251,534).

In regards to claims 15, 16, 18-24, the McElroy reference teaches a fuel cell comprising a cathode flow plates, an anode flow plates and a diffusion layer disposed between the flow plates (Column 1, Lines 9-13). The reference also teaches a switching apparatus with a function capable of switching gas flow channels from parallel to series and vice versa. (Column 4, Lines 24-27). The McElroy reference illustrates two gas flow channels (Figure 3 and 4). McElroy discloses a stack of fuel cells (Column 2, Lines 66-67) with multiple flow field plates resulting in gas flow channels that equals to three or more leading to inlet and outlet (Figure 6, Components 610 and 620 respectively) manifold.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 15, 22-24 rejected under 35 U.S.C. 102(e) as being anticipated by Skala et al. (US Patent 6,911,277).

In regards to claim 15, 22-24, the Skala et al. reference teaches a PEM fuel cell stack (Column 1, Lines 16-30) with bipolar plates which utilizes a rotor sector valve in the manifolds to change the flow paths in series or parallel connection (Claim 1). The Skala et al. reference also discloses the rotary sector valve arrangement can be provided in both anode and cathode gas manifolds (Column 3, Lines 50-55). A bipolar plate taught by the Skala et al. reference defines passages from the reactant gasses to be distributed over the face of the corresponding anode and cathode catalyst (Column 3, Lines 10-17). In arrangement means that the bipolar plate must have fuel flow channels on one side of the bipolar plate (Applicant's first gas flow channel) and oxidant flow channels on the other side of the bipolar plate (Applicant's second gas flow channel).

#### ***Response to Arguments***

3. Applicant's arguments filed 3/6/2007 have been fully considered but they are not persuasive.

Applicant's principal arguments is:

- a. McElroy does not disclose switching devices for switching a connection between the first and second gas flow channels from a parallel connection to a series connection, and from a series connection to a parallel connection, as required by amended independent claim 15. In particular, McElroy only discloses a gas flow plate (e.g., anode flow field plate 220, as shown in Fig. 3) having flow channels 226, and does not disclose that a connection between the flow

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channels 226 in one gas flow plate is switched from a parallel connection to a series connection, and from a series connection to a parallel connection. Therefore, McElroy does not disclose switching devices for switching a connection between first and second gas flow channels, both of which are provided within a plate, because McElroy only discloses switching the connection between separate stacks of fuel cells.

In response to Applicant's arguments, please consider the following:

- a. The recitation "switching a connection" is very broad. The recitation "connection" is interpreted by the Examiner to be the flow paths defined by the Applicant and the connection is on the plate and connects between the first and second flow paths of which is originally interpreted and therefore in order for the first and second flow channel connection to be switched there has to be a switching device to switch the connection between the two flow paths on the plate. The Specification does not support a switching device for switching a connection between first and second gas flow channels within the gas flow plate. That is there is no switching device on the gas flow plate that would cause the connection between the first flow channel and the second flow channel to be manipulated to switch between a series or parallel flow direction. The McElroy discloses switching devices external to the plate, which is equivalent to the Applicants' switching device causing a series and parallel flow. Please refer to 35 U.S.C 112 rejections. It appears that the invention is not "the switching of the connection" but the "switching of gas flow paths" on one plate.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helen O. Chu whose telephone number is (571) 272-5162. The examiner can normally be reached on Monday-Friday 8am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HOC

  
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PRIMARY EXAMINER  
4/07